DOCUMENT RESUME

ED 075 882 CS 500 257

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TITLE Complex Communication System and Social Change.
PUB DATE Apr 73
NOTE 11p.; Paper presented at the Annual Meeting of the International Communication Assn. (Montreal, Canada, April 25-28, 1973)

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Change Agents; *Communication (Thought Transfer); Communication Skills; Cultural Awareness; *Information Theory; Interaction Process Analysis; Social Attitudes; *Systems Analysis; *Systems Approach

ABSTRACT

The basic question under examination is the underlying force that brings forth changes in cultural and social organizations. By employing general system theory and communication systemic analysis, the author concludes that communication, especially human communication, is the main vehicle of change. Human interchange, it is suggested, is constant and self-reflective at the subconscious and conscious levels in which the individual "constructs himself-in-his-environment." The interrelation of the individual and his systematic universe forms the basis of change. This interdependency is the best mode of approaching communication study. (Author/CH)

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COMPLEX COMMUNICATION SYSTEM AND SOCIAL CHANGE

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International Communication Association (ICA)
April 25-28, 1973 Montreal (Canada) Convention

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Complex Communication System and Social Change

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Social scientists have done a great deal of study on the nature and consequences of change at various levels in a variety of institutional areas--in culture as well as in social organizations. The purpose of this paper is not to define these levels of change, but to ask a more basic and important question: What is the underlying force that brings such changes? Toward the conceptual development, I postulate that "communication is the main vehicle by which such changes occur."

Relating to this postulate two ontological questions are discussed: What is human communication? How is it possible?

Most of the earlier studies regarding communication theory were done by symbolic interactionists. They tended to look at communication as an end-product, emphasizing a hyperdermic needle approach of putting the message into people's mind. As a result the aspect of individuality tended to be obscured in these communication studies. An alternative to this approach delineates that communication is a continuous function of human beings. It is vital to human existence.[1]

Clearly, descriptions of communication offered by "scholars" from almost every academic discipline have not gotten to the heart of the

issue. Using communication as a "catch word," they have made it serve as a camouflage which resists attempts to look into the process of communication and comprehend it in a detached way.

Human communication is a constant process within the individual in which he takes something into account for some end. It is a self-reflective process at the sub-conscious and conscious levels in which the individual constructs himself-in-his-environment.

The communication system is the smallest indivisible unit for the systematic study of communication. It includes the individual and that which is being taken into account. For this description the basic unit of analysis is the communication system whose functions are 1) exploitation, establishment, confirmation or alteration of some relationship between the system and some aspects of its environment through the decisioning of the organism informed within that environment, and 2) between some aspects of the environment and the organism. The above common functions are served by four operational subfunctions: a) generating, b) disseminating, c) acquiring, and d) consuming.[2]

While the basic unit of analysis in this study is the communication system (intrapersonal) there are other levels of analysis: interpersonal and organizational (societal function). Ruesch and Bateson divide this context into intrapersonal, interpersonal, groups (one to many and many to one), and cultural (space binding messages of many to many).[3] Levels of communication are divided because of the empirically unavoidable perspective on the basic human process underlying all communication.

When I look at the communication system in terms of interaction, the general system theory gives me insight into its nature.

Looking forward to the utility of system concepts, Ackoff[4] in 1959 said that a system now is examined as an entity rather than as a conglomeration of parts.

System is a set of objects and the relationships between them and their attributes;[5] where objects are constituent parts of system, attributes are properties of the constituent parts, and relationships are the interactions which bind the parts together to form the system.[6] In a communication system these objects are humans, and the attributes are human communicative behavior. The objects of an interactional system, however, are best described not as individuals but as person-interacting-with-other persons.[7] According to Hall and Fagen, what makes the notion of system useful are the concepts of "relationship" and "environment." By explaining this relationship concept, we can further understand the interactional system. Hall and Fagen[8] said the relationships to be considered depend on the problems.

The relationship aspect, not content, is the important property of human communication. Thus, an interaction system is two or more communicants in the process of, or at the level of, defining the nature of their relationships.

The other important property of an interaction system is the definition of environment. "For a given system, the environment is the set of all objects and changes in whose attributes that are changed by the behavior of the system."[9]

Thus, any given system may be further subdivided into subsystems; and objects belonging to one system can well be considered as part of the environment of the other system. Constituent parts can themselves be regarded as systems or sub-systems. Koester[10] noted that a living system is an integrated hierarchy of semiautonomous sub-wholes.

With this construction I can place the individual human system into a dyad, the dyadic system into a family, the family system into a social system, and so on.

There are two theoretical categories of systems: closed and open. Distinguishing these two categories is useful in the study of communication and social change because some of the formal properties of an open system have crucial dealings with the environment that the closed system does not.

"A system is closed if there is no import or export of energies in any of its forms, such as information, heat, physical materials, etc., and therefore no change of components,"[11] Hall and Fagen explain. On the other hand, organic systems are open, "meaning they exchange materials, energies, or information with their environments."[12]

Self-generating wholeness, feedback, and multifinality are properties of system which are important and useful for this study.

Self-generating wholeness: All parts of a system are characterized by mutual interdependence among the parts. Every part is so related to the other parts that a change in any one part will cause change in all of the others and in the total system. To put it in Watzlawick's

term, "a system behaves not as a simple compositive of independent elements, but coherently and as an inseparable whole."[13]

This notion implies that interaction is non-summative; a system cannot be taken as the sum of its parts, but as the multilateral relations between elements. A sequence of the interaction may be punctuated by the observers into a pattern of one-way causality, but such sequence is in fact circular, and the apparent response would be a stimulus for the next punctuation in this interdependent chain.

Feedback: A system is characterized by the concept of feedback because it monitors its own behavior and, hence, the behaviors of environmental phenomena. An open system adjusts to environmental phenomena as well as making its adjustments felt upon its environment. A thermostat is a feedback device. The metal elements of the thermostat are sensitive to temperature changes so they automatically turn a heat-generator off or on whenever environmental temperature reaches certain specified limits.

The concept of feedback is explained by Cofer and Appley[14] in relation to human behavior:

> Reacting to disturbance (i.e., stimulation), the system (or any subsystem) responds. Its response affects the environment in some particular way, at the same time 'reporting back' what has been done. The central regulatory apparatus then computes the discrepancy between performed and intended action and the succeeding response 'is corrected for error.' Such a consequence is repeated until the residual error is so small as to lie within the range of the target.

The adjustment of behavior on the basis of performed actions as feedback may be as simple as that of the common reflex, or it may be a higher order of feedback, in which past experience is used not only to regulate specific movements, but also, whole policies of behavior."[15]

Westley and MacLean in their "Conceptual Model for Communication Research" emphasized the role and effects of "gatekeepers" on the flow of information and the effects of feedback from receiver to intermediate source or from one intermediate to another.[16]

Multifinality: In a system, results of change are not determined as much by initial conditions as they are by the self-regulating processes of the system. "If the equifinal behavior of open systems is based on their interdependence of initial conditions, then not only may different initial conditions yield the same final result, but different results may be produced by the same 'cause.'[17]"

Change is alteration of the pattern of organization. It results from interaction among constituent parts or from interaction between the organization and other phenomena.

Entropy is a measure of disorder which tends to increase. Organization is the opposite of entropy; it has a limited and temporary tendency to increase. The human being is an open system in which organization tends to increase -- to oppose entropy. The individual's coping with his environment depends upon his exchange of energy and materials with the environment. Therefore, man enhances entropy by attempting to retain those environmental variables with which he is incompatible. In other words, man induces and sustains a limited organization in his environment.

Through control man attempts to retain that change in environmental phenomena which is vital to his welfare. Control functions to anticipate crises that occur after essential variables have reached drastic limits. Man's welfare depends upon the supply of certain materials external to his organism. Therefore, he tries to develop

control and avoid curtailment of control of change essential to his welfare. The result is cumulation of control.

Control may be cumulated by gaining control over change in any phenomenon and by abstracting the principle underlying control in a phenomenon to other phenomena. Control-cumulation enables the individual to bring specific inputs into the general storehouse of social change.

Indeed, man's basic need is to cumulate control over change in essential variables. This governs the course of social change.

Taking into account all of the difficulties and barriers, we try to apply these system properties--self-generating wholeness, feedback, multifinality--to communication and interaction.

A communication and interaction system functions not as a simple composite of independent elements, but coherently and as an inseparable whole. Systems adjust to environmental phenomena and make their adjustments felt upon the environment; and in the system, results of change occur by the self-regulating process of the system. If the equifinal behavior of the systems is based on their interdependence of initial conditions, then not only may different initial conditions yield the same final results, but also, they may be produced by the same cause.

This complicated complex-process view of communication leads to establishing a vital methodological implication to study <u>social change</u>

(which is carried out by continuous communication processes.) This implication offers an alternative way from the traditional public concreteness as a result of categorizations of normative behavior of human beings. Taking an individual human being as a unit of analysis, William Stephenson's[18] Q methodology provides solid theoretical groundwork for the study of social change. The Q methodology is based on the dependence analysis of combinations of two methods; one Fisher's, and the other, a reformulation of factor analysis. Fisher's methodology is used to deal with explanation or theories. While dependence factor analysis is employed for putting experimental propositions to test. There are no routine rules for this.

Practically, it consists in solving the centroid factors by rotations in order to provide answers for propositions which were asserted beforehand. But Stephenson also explains these methods in terms of experimental research conditions; independent variables exist in the sample and in the conditions of instructions. Each variate is a dependent variable. Factors, likewise, are dependent variables.

The basic philosophy of Q methodology depends upon a belief that scientific behavior is concrete and never the object of any absolute principles of deduction or induction. Therefore, the lack of any routine procedures in dependence factor analysis is stressed. The distinction between theories which are never tested for their general implications and singular testable propositions may seem innocuous; but because of this confusion, theories never were tested in R Factor analysis. However, their separation in Q methodology has proved to be rewarding.

The unique characteristic of Q methodology develops from a fairly open-ended procedure whereby the respondent is allowed to model his own view of the objects of interest. Even though Q methodology provides enough room for deductive testing, it is suited to a versatile analysis of data, and is appropriate to studies that have an exploratory objective.

Toward the application of the Q methodology to exploratory study of social change, MacLean said that this technique emphasizes large samples of content and small, purposely selected samples of persons. It uses a semi-ranking system called the Q-sort which requires the persons responding to evaluate materials, statements, items, or whatever, relative to each other. In this, it is similar to rank-ordering, paired comparisons, triad, and other ipsative (within self) systems. A Q-sort is more efficient that other systems for a large sample of contents. The value of ipsative analysis for many of the problems described above is that it reflects more closely than normative (among persons) analysis the apparent basis for decisions.[19]

Applying factor analysis, Q technique yields typologies of persons in terms of patterns of beliefs, values, interests, activities, source evaluations, content emphasis, or whatever the investigator is interested in. Thus it becomes possible, for example, to describe comprehensive and complex belief patterns for each of the several types isolated in factor analysis. Then, for each belief we can determine which more general values the type holds in high or low esteem.

NOTES

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4. R. L. Ackoff. "Games, Decisions, and Organization," General Systems IV, 1959, pp. 145-50.

5. A. D. Hall and R. E. Fagen. "Definition of Systems," General Systems I, 1956, p. 18.

6. Ibid.

7. Paul Watzalawick, Janet H. Beavin, and Don D. Jackson. Pragmatics of Human Communication. New York: W. W. Norton & Co., 1967, p. 120.

8. Hall and Fagen, op. cit., p. 18.

9. Ibid., p. 20.

10. Arthur Koestler. The Act of Creation. New York: The Macmillan Co., 1964. p. 287.

11. Hall and Fagen, op. cit. 23.

12. Ibid.

13. Watzlawick, et.al., op. cit., p. 123.

14. Charles N. Cofer and Mortimer H. Appley. Motiviation: Theory and Research. New York: John Wiley, 1964. p. 346.

15. Norbert Wiener. Human Use of Human Beings: Cybernetics and Society. Garden City, New York: Doubleday, 1954. pp. 47-48.

16. Bruce H. Westley and Malcolm S. MacLean, Jr., "A Conceptual Model for Communication Research," Journalism Quarterly[34].

17. Watzlawick, et al., op. cit., p. 127.

18. William Stephenson. The Study of Behavior. Chicago: University of Chicago Press, 1953.

19. Malcolm S. MacLean, Jr., "Theory, Methods and Games in Communication," a paper prepared for a meeting of the Behavioral Science Section of the International Association for Mass Communication Research, University of Iowa, 1968. p. 6.